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NTDB id 600 KW2 RS01765 WP 011675413.1	MATKK....KTNFDDITKKYGAERDKALADALALIEKD FGKGSIMRLGER.ANQKVS VSSGSLALDIALGAGGYPKGR	74
NTDB id 269 KZH43 RS08665 WP 001085462.1	.MAKK....PKKLEEISKKFGAEREKALNDALKLIEKDFGKGSIMRLGER.AEQKVQVMSSGSLALDIALGSGGYPKGR	73
NTDB id 228 SPD RS09265 WP 001085462.1	.MAKK....PKKLEEISKKFGAEREKALNDALKLIEKDFGKGSIMRLGER.AEQKVQVMSSGSLALDIALGSGGYPKGR	73
NTDB id 194 SPR RS08825 WP 001085462.1	.MAKK....PKKLEEISKKFGAEREKALNDALKLIEKDFGKGSIMRLGER.AEQKVQVMSSGSLALDIALGSGGYPKGR	73
NTDB id 159 SP RS09750 WP 001085462.1	.MAKK....PKKLEEISKKFGAEREKALNDALKLIEKDFGKGSIMRLGER.AEQKVQVMSSGSLALDIALGSGGYPKGR	73
NTDB id 527 SMSK321 RS11065 WP 001085454.1	.MAKK....PKKLDEISKKFGAEREKALNDALKLIEKDFGKGSIMRLGER.AEQKVQVMSSGSLALDIALGSGGYPKGR	73
NTDB id 499 SM12261 RS08315 WP 078228268.1	.MAKK....PKKLDEISKKFGAEREKALNDALKLIEKDFGKGSIMRLGER.AEQKVQVMSSGSLALDIALGSGGYPKGR	73
NTDB id 408 SMU RS09530 WP 002262392.1	.MAKR....IKKTEEITKKFGDERRKALDDALKNIEKDFGKGAVMRLGER.AEQKVQVMSSGSLALDIALGAGGYPKGR	73
NTDB id 453 Spy49 1753c ACI62003.1	.MAKK....LKKNEEITKKFGDERRKALDDALKNIEKDFGKGAVMRLGER.AEQKVQVMSSGSLALDIALGAGGYPKGR	73
NTDB id 115 BSU 16940 NP 389576.2	.....MSDRQAALDMALKQIEKQFGKGSIMKLG EK.TDTRISTVPSGSLALDIALGIGGYPRGR	58
NTDB id 625 LCA RS02525 WP 011374196.1	.....MAKDERQAALDAALKKIEKNFGKGSIMRMGEK.VDTQVSTVSSGSLALDEALGVGGYPRGR	60
NTDB id 1313 DR RS12030 WP 010888966.1	.....MSKDATKEISAPTDAKERSKATETAMSQIEKAFGKGSIMKLGAE.SKLDVQVVSTGSLSLDLALGVGGIPRGR	72
NTDB id 1245 Cj1673c YP 002345041.1	.....MDNKRKSLDAALKS LDKT FGKGTILRLGDK.EVEQIDSIGTGSVGLDLALGIGGVPKGR	59
NTDB id 1211 C694 RS00795 WP 000963128.1	.....MAIDEDKQKATISLAIKQIDKVF GK GALVRLGDK.QVEKIDSISTGSLGLDLALGIGGVPKGR	61
NTDB id 1214 NCTC11637 00359 SQJ03206.1	.....MAIDEDKQKATISLAIKQIDKVF GK GALVRLGDK.QVEKIDAISTGSLGLDLALGIGGVPKGR	61
NTDB id 1334 RAOC RS04870 WP 004918236.1	.....MAKT..ETTSPNDDKKKALAAVLEK LDKT YGKGTVMKLG DGTVDHNIIEVIPSGLGLDLALGVGGYPKGR	68
NTDB id 1389 A4U84 RS07560 WP 021112712.1	.MAENKKSNNNTV.VKQVEPEQKKQALEAALAQIEKQFGKGSIMKLGQT.EQLDIESVSTGSLGLDLALGIGGLPMGR	76
NTDB id 370768 FKV23 RS06215 WP 141623074.1	.....MDENKKRALSALGQIEKQFGKGSVMRMGDR.VVEAAEVIGTGSMLMDIALGIGGLPKGR	59
NTDB id 1130 NGFG RS03960 WP 003688695.1	.....MSDDKSKALAAALAQIEKSF GKGAIMKMDGSQREENLEVISTGSLGLDLALGVGGLPRGR	60
NTDB id 1124 NGFG RS03960 WP 003688695.1	.....MSDDKSKALAAALAQIEKSF GKGAIMKMDGSQREENLEVISTGSLGLDLALGVGGLPRGR	60
NTDB id 1123 OK783 RS03845 WP 003688695.1	.....MSDDKSKALAAALAQIEKSF GKGAIMKMDGSQREENLEVISTGSLGLDLALGVGGLPRGR	60
NTDB id 1427 RS RS02760 WP 011000510.1	.MEDG.....K.KAASMSAEKQKALAAALAQIEKQFGKGSIMKMGDA.EVEPVQVVSTGSLGLDV ALGVGGLPRGR	68
NTDB id 1165 A1552VC RS01565 WP 000344154.1	.....MDENKQKALAAALGQIEKQFGKGSIMRLGDN.RAMDVETISTGSLSLDIALGAGGLPMGR	59
NTDB id 1142 GTF74 RS11550 WP 000344154.1	.....MDENKQKALAAALGQIEKQFGKGSIMRLGDN.RAMDVETISTGSLSLDIALGAGGLPMGR	59
NTDB id 1022 ACIAD RS06390 WP 004925639.1	.....MDDNKSKALQAALSQIEKQFGKNTVMRLGDN.TVQAVEAVSTGSLTLDIALGIGGLPKGR	59
NTDB id 1074 ABD1 RS10195 WP 000344167.1	.....MDENKSKALQAALSQIEKQFGKNTVMRLGDN.TVQAVEAVSTGSLTLDIALGIGGLPKGR	59
NTDB id 1205 PSJM300 05545 AFN77183.1MDENKKRALAAALGQIEKQFGKGAVMRMGDH.DRQAIPSI STGSLGLDIALGIGGLPKGR	59
consensus	*** ** * ** *! *!***** * **!*!*!*!*!*! !*! !*! !*!	

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NTDB id 600 KW2 RS01765 WP 011675413.1	ASVRLDVRGSTKIEEGS.GDNKTQIGKIITKIKVVKNKVAPPFKVALVDIMFGEGISSTGELINIAVEEGITIKKSGAWFAY	311
NTDB id 269 KZH43 RS08665 WP 001085462.1	ASVRLDVRGNTQIKGTG.DQKETNVGKETKIKVVKNKVAPPFKAEAVVEIMYGEGISKTGELLKIASDLDIKKAGAWYSY	310
NTDB id 228 SPD RS09265 WP 001085462.1	ASVRLDVRGNTQIKGTG.DQKETNVGKETKIKVVKNKVAPPFKAEAVVEIMYGEGISKTGELLKIASDLDIKKAGAWYSY	310
NTDB id 194 SPR RS08825 WP 001085462.1	ASVRLDVRGNTQIKGTG.DQKETNVGKETKIKVVKNKVAPPFKAEAVVEIMYGEGISKTGELLKIASDLDIKKAGAWYSY	310
NTDB id 159 SP RS09750 WP 001085462.1	ASVRLDVRGNTQIKGTG.DQKETNVGKETKIKVVKNKVAPPFKAEAVVEIMYGEGISKTGELLKIASDLDIKKAGAWYSY	310
NTDB id 527 SMSK321 RS11065 WP 001085454.1	ASVRLDVRGSTQIKGTG.DQKDTNVGKETKIKVVKNKVAPPFKAEAFVEIMYGEGISKTGELLKIASDLDIKKAGAWYSY	310
NTDB id 499 SM12261 RS08315 WP 078228268.1	ASVRLDVRGSTQIKGTG.DQKDTNVGKETKIKVVKNKVAPPFKAEAFVEIMYGEGISKTGELLKIASDLDIKKAGAWYSY	310
NTDB id 408 SMU RS09530 WP 002262392.1	SSVRLDVRGNTQIKGTG.EQKDSNIGKETKIKVVKNKVAPPFKAEAFVEIITYGEGISRTGELVKIASDLGI IQKAGAWYSY	310
NTDB id 453 Spy49 1753c ACI62003.1	ASVRLDVRGTTQIKGTG.DQKDSNIGKETKIKVVKNKVAPPFKVAEVEIMYGEGISRTGELVKIASDLDI IQKAGAWFSY	310
NTDB id 115 BSU 16940 NP 389576.2	SSVRLVRRRAEQLKQGN.....DVMGNKTKIKVVKNKVAPPFRTAEVIMYGEGISKEGEITIDLGTEL DIVQKSGSWYSY	291
NTDB id 625 LCA RS02525 WP 011374196.1	STVRLVRRRAETIKNGT.....DMIGNRARIKVVKNKVAPPFKVAEVDIMYGGGISRTGELVDMAVEKDI INKSGSWYSY	293
NTDB id 1313 DR RS12030 WP 010888966.1	ASVRLDVRKIGQ....PTKVGNDVAVANTVKKIKTVKNKVAAPPFKVEVELALVYKGFQDLSDLVGLAADMDI IKKAGSFYSY	306
NTDB id 1245 Cj1673c YP 002345041.1	ASVRLDVRKIVAT....L.KQNEEPIGNRVKVVVKNKVAPPFRQAEEFDVDFGEGLSREGELIDYGVKLDIVDKSGAWFSY	293
NTDB id 1211 C694 RS00795 WP 000963128.1	ASVRIDIRRIAS....L.KQNEQHIGNRAKAKVVKNKVAPPFRQAEEFDIMFGEGISKEGEIIDYGVKLDIVDKSGAWLSY	295
NTDB id 1214 NCTC11637 00359 SQJ03206.1	ASVRIDIRRIAA....L.KQNEQHIGNRAKAKVVKNKVAPPFRQAEEFDIMFGEGISKEGEIIDYGVKLDIVDKSGAWLSY	295
NTDB id 1334 RAOC RS04870 WP 004918236.1	ASVRIDIRRSLSDTGKIKDKSGEVIGNRTKVVVKNKVAPPFKSAEFDIMYGEGVSKVGEILDVATDLDI IQKSGSWFSY	306
NTDB id 1389 A4U84 RS07560 WP 021112712.1	ASVRLDIRRCGV....V.KGDDEIIGSETKVVVKNKVAPPFRQAEFDIMYGEGISRMNELLILAEANGFI IKKSGAWFSY	309
NTDB id 370768 FKV23 RS06215 WP 141623074.1	ASVRLDIRRIGS....I.KKGDEIIGNQTKIKVVKNKLAAPPFKQVITEILYGEGISREGELIDMGVNAKLV DKAAGAWYSY	294
NTDB id 1130 NGFG RS03960 WP 003688695.1	SSVRLDIRRTGS....I.KKGEVVLGNETRVKVIKNKVAPPFRQAEEFDILYGEGISWEGELIDIGVKNDI INKSGAWYSY	293
NTDB id 1124 NGFG RS03960 WP 003688695.1	SSVRLDIRRTGS....I.KKGEVVLGNETRVKVIKNKVAPPFRQAEEFDILYGEGISWEGELIDIGVKNDI INKSGAWYSY	293
NTDB id 1123 OK783 RS03845 WP 003688695.1	SSVRLDIRRTGS....I.KKGEVVLGNETRVKVIKNKVAPPFRQAEEFDILYGEGISWEGELIDIGVKNDI INKSGAWYSY	293
NTDB id 1427 RS RS02760 WP 011000510.1	ASVRLDIRRIGS....I.KKGDEVVGNETKVVVKNKVAPPFRQAEEFDILYGAGVSREGEIIDLGVEAKVVEKSGAWYSY	301
NTDB id 1165 A1552VC RS01565 WP 000344154.1	ASVRLDIRRTGA....I.KEGEEVVGNETRIKVVKNKIAAPPFKAEANTQIMYGGGFNREGELIDLGVKHKMVEKSGAWYSY	292
NTDB id 1142 GTF74 RS11550 WP 000344154.1	ASVRLDIRRTGA....I.KEGEEVVGNETRIKVVKNKIAAPPFKAEANTQIMYGGGFNREGELIDLGVKHKMVEKSGAWYSY	292
NTDB id 1022 ACIAD RS06390 WP 004925639.1	ASVRLDIRRIGQ....V.KEGDEIIGSETKVVVKNKMAPPFRQAEEFDILYGKGVNQLGELVDLAVQQNIVQKAGAWYSY	292
NTDB id 1074 ABD1 RS10195 WP 000344167.1	ASVRLDIRRIGQ....V.KEGDEIIGSETKVVVKNKMAPPFKAEAFQILYKGTNQLGELVDLAVQQDIVQKAGAWYSY	292
NTDB id 1205 PSJM300 05545 AFN77183.1	ASVRLDIRRTGA....V.KEGDEVVGSETRVKVVKNKVAPPFRQAEEFDILYKGIYRNGEIIDLGVQQGLVEKSGAWAY	292
consensus	**!!**!* * ** *****!!!!!!** * *****!*** ** * ** * ! !*****!	

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NTDB id 600 KW2 RS01765 WP 011675413.1
 NTDB id 269 KZH43 RS08665 WP 001085462.1
 NTDB id 228 SPD RS09265 WP 001085462.1
 NTDB id 194 SPR RS08825 WP 001085462.1
 NTDB id 159 SP RS09750 WP 001085462.1
 NTDB id 527 SMSK321 RS11065 WP 001085454.1
 NTDB id 499 SM12261 RS08315 WP 078228268.1
 NTDB id 408 SMU RS09530 WP 002262392.1
 NTDB id 453 Spy49 1753c ACI62003.1
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 NTDB id 1214 NCTC11637 00359 SQJ03206.1
 NTDB id 1334 RAOC RS04870 WP 004918236.1
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 NTDB id 370768 FKV23 RS06215 WP 141623074.1
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 NTDB id 1124 NGFG RS03960 WP 003688695.1
 NTDB id 1123 OK783 RS03845 WP 003688695.1
 NTDB id 1427 RS RS02760 WP 011000510.1
 NTDB id 1165 A1552VC RS01565 WP 000344154.1
 NTDB id 1142 GTF74 RS11550 WP 000344154.1
 NTDB id 1022 ACIAD RS06390 WP 004925639.1
 NTDB id 1074 ABD1 RS10195 WP 000344167.1
 NTDB id 1205 PSJM300 05545 AFN77183.1

consensus



NDEKIGQGA**E**KAKNYLKEHQ**D**V**F**DEIDHKVRAAHG**L**IDDSEVAETEEETTASKTKAKAKKEEKAVETEEIELELED... 387
 KDEKIGQGS**E**NAKKYLA**E**HP**E**IF**D**EIDKQVRSK**F**GLIDGEEVSEQDTENKKDE...PKKEEA..VNEEVPLDLGDELEI 384
 KDEKIGQGS**E**NAKKYLA**E**HP**E**IF**D**EIDKQVRSK**F**GLIDGEEVSEQDTENKKDE...PKKEEA..VNEEVPLDLGDELEI 384
 KDEKIGQGS**E**NAKKYLA**E**HP**E**IF**D**EIDKQVRSK**F**GLIDGEEVSEQDTENKKDE...PKKEEA..VNEEVPLDLGDELEI 384
 KDEKIGQGS**E**NAKKYLA**E**HP**E**IF**D**EIDKQVRSK**F**GLIDGEEVSEQDTENKKDE...PKKEEA..VNEEVPLDLGDELEI 384
 KDEKIGQGS**E**NAKKYL**A**DN**P**EF**A**EIDHQV**R**V**Q**F**G**LIDGEEAAE...SKKDE...VAQVDS..VNEEVTLDLGDELEI 380
 KDEKIGQGS**E**NAKKYL**A**DN**P**EF**D**EIDHQV**R**V**Q**F**G**LIDGEEIAE...SKKDE...AAQVDS..VNEEVTLDLGDELEI 380
 NGEKIGQGS**E**NAKK**F**L**A**DN**P**EF**D**DI**D**HKV**R**V**Q**Y**G**LIEEDNTEEKQSSKEK.....ETDEK..ADKNLVLELDDTIEL 381
 NGEKIGQGS**E**NAKRYL**A**D**H**P**Q**L**F**DEID**R**KV**R**V**K**F**G**LLEESEEEESAMAVASE.....E.....TDDLALDLDNNGIEI 376
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 NGAKIGQG**K**D**N**V**R**V**W**L**K**EN**P**E**I**S**D**E**I**D**A**K**I**R**A**L**N**G**V**E**M**H**I**.....T**E**G**T**Q**D**E**T**D**G**E**R**.....P**E**E..... 348
 NGAKIGQG**K**D**N**V**R**V**W**L**K**EN**P**E**I**S**D**E**I**D**A**K**I**R**A**L**N**G**V**E**M**H**I**.....T**E**G**T**Q**D**E**T**D**G**E**R**.....P**E**E..... 348
 NGERIGQGR**D**N**C**R**E**FL**R**EN**A**E**L**A**R**E**I**EN**K**V**R**E**H**L**G**V**T**P**M**G.....A**V**T**L**A**E**E**V**E**E**.....D..... 352
 NGDKIGQG**K**AN**A**C**K**Y**L**EN**P**E**I**A**K**T**L**D**K**K**L**R**E**M**L**L**N**P**E**N**M**.....Q**L**I**A**E**T**S**S**A**A**D.....D**V**E**F**G**A**V**P**E**E**F..... 354
 NGDKIGQG**K**AN**A**C**K**Y**L**EN**P**E**I**A**K**T**L**D**K**K**L**R**E**M**L**L**N**P**E**N**M**.....Q**L**I**A**E**T**S**S**A**A**D.....D**V**E**F**G**A**V**P**E**E**F..... 354
 QGN**K**I**G**Q**G**K**N**N**V**I**R**Y**F**E**E**N**N**Q**I**A**E**E**I**E**R**N**I**R**E**Q**L**L**T**T**G**T**N**.....G**A**V**Q**.....I**E**E**E**.....E**P**D**L**L.....E**S**..... 349
 KGS**K**I**G**Q**G**K**A**NA**A**K**Y**L**E**EN**P**E**I**G**Q**E**I**E**Q**Q**I**R**A**K**L**L**V**T**S**A**N**.....T**K**A**T**P**V**A**E**D**L**A.....D**A**D**I**..... 347

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	E	I	E	E	
NTDB id 600 KW2 RS01765 WP 011675413.1	387
NTDB id 269 KZH43 RS08665 WP 001085462.1	E	I	E	E	388
NTDB id 228 SPD RS09265 WP 001085462.1	E	I	E	E	388
NTDB id 194 SPR RS08825 WP 001085462.1	E	I	E	E	388
NTDB id 159 SP RS09750 WP 001085462.1	E	I	E	E	388
NTDB id 527 SMSK321 RS11065 WP 001085454.1	E	I	E	E	384
NTDB id 499 SM12261 RS08315 WP 078228268.1	E	I	E	E	384
NTDB id 408 SMU RS09530 WP 002262392.1	E	D	.	.	383
NTDB id 453 Spy49 1753c ACI62003.1	E	D	.	.	378
NTDB id 115 BSU 16940 NP 389576.2	.	.	.	.	348
NTDB id 625 LCA RS02525 WP 011374196.1	.	.	.	.	355
NTDB id 1313 DR RS12030 WP 010888966.1	363
NTDB id 1245 Cj1673c YP 002345041.1	343
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NTDB id 1389 A4U84 RS07560 WP 021112712.1	372
NTDB id 370768 FKV23 RS06215 WP 141623074.1	343
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NTDB id 1123 OK783 RS03845 WP 003688695.1	348
NTDB id 1427 RS RS02760 WP 011000510.1	352
NTDB id 1165 A1552VC RS01565 WP 000344154.1	.	.	.	.	354
NTDB id 1142 GTF74 RS11550 WP 000344154.1	.	.	.	.	354
NTDB id 1022 ACIAD RS06390 WP 004925639.1	.	.	.	.	349
NTDB id 1074 ABD1 RS10195 WP 000344167.1	.	.	.	.	349
NTDB id 1205 PSJM300 05545 AFN77183.1	.	.	.	.	347

consensus

 non conserved
 similar
 ≥ 50% conserved